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ABSTRACT

A study investigated the role of comprehension of meaningful language input in young adults' second language learning, focusing on: (1) what kinds of measurement instruments and procedures can be used in tracking student gains in specific aspects of target language proficiency; (2) development of a reliable self-report scale capturing different vocabulary knowledge levels; and (3) use of introspection in exploring links between comprehension of meaning and acquisition of vocabulary. Subjects were 37 university students in 2 language classes, an experimental group using a comprehension-based approach and authentic texts and a control group using an integrated 4-skills approach and emphasizing grammar instruction. A series of tests were administered: baseline global language proficiency tests, two rational deletion cloze tests, a self-report of vocabulary knowledge, two measures of grammatical knowledge, and (in the comprehension-based class) an introspective task on vocabulary acquisition. Results indicate superior gains in the comprehension-based class in text comprehension and discourse processing, despite smaller gains in grammatical knowledge, suggesting that explicit grammar instruction is not needed to advance comprehension skills. However, accuracy in writing and speaking was found to be linked to grammar instruction. It is concluded that comprehension-based instruction develops receptive proficiency, but other gains appear idiosyncratic. (MSE)

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A Methodology for Studying the Relationship Between Comprehension and Second Language Development in a Comprehension-Based ESL Program

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A Methodology for Studying the Relationship Between Comprehension and Second Language Development in a Comprehension-Based ESL Program[1] [2]

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January 1992

Introduction

This paper reports on the first stage of a long-term project to investigate the role of comprehension of meaningful language input in second langauge development by young adults. The context is a comprehension-based program for beginning to intermediate learners of English as a second langauge. Our objective is to study the language learning outcomes of a teaching approach which emphasizes global comprehension of information-rich written and oral texts. These outcomes include gains in global reading and listening comprehension ability, and in vocabulary, grammatical and discourse knowledge. In this context we have begun to look at differential vocabulary learning outcomes from written texts which have been used for global comprehension in instructed versus uninstructed texts. We have begun to try to link given learning outcomes to different types of instructional tasks used in the comprehension-based methodology, based on observations of how learners carry out these tasks. In a subsequent phase of the research we will focus on lexical items in an attempt to establish links between input features, pedagogical tasks and the internalization of knowledge about and the ability to use specific forms. Our immediate concern, however, has been the development of an appropriate methodology for beginning to investigate these relationships. We will discuss our findings to date in the framework of a pilot study carried out in the fall of 1989.

Theoretical Background

A widely held view in the current literature on second language acquisition is that one major way in which second language learners acquire grammatical and other kinds of language knowledge is through exposure to and comprehension of meaningful oral or written input in that language. Considerable research has been done on the nature of language input to second language learners (cf. reviews in Hatch 1983; Chaudron 1988a; Larsen-Freeman and Long 1991; Wesche, forthcoming). Particular attention has been given to modifications made by native speakers addressing language learners, which are thought to increase the comprehensibility of the input and possibly to facilitate their language acquisition in several ways. Some studies have examined the effect of input modifications on the comprehensibility of spoken discourse by native speakers (e.g., Henzl 1973; Long 1985; Chaudron 1985, 1988). Other research has linked such modifications to global proficiency gains (e.g., Edwards *et al.* 1984; Wesche and Ready 1985), and in some cases to the acquisition of specific elements of syntax and vocabulary (e.g., Wagner-Gough and Hatch 1975; Lightbown 1983; Hawkins 1987; Braidi 1991). While links between input features and acquisition have been demonstrated to some extent, there remains a need for research on the direct relationship between the act of comprehension and the internalization of linguistic knowledge (Faerch and Kasper 1986; Long 1983). Recent work by Ellis (forthcoming) on a methodology for investigating the acquisition of syntactic knowledge through meaning-focused comprehension activities, using manipulated language, is one of few examples of the latter. Our research is an attempt to link comprehension of natural written and spoken language input with aspects of second language development in a classroom situation.

Comprehension-Based Second Language Instruction

Theoretical rationale

The theoretical rationale for a comprehension-based approach at early stages of teaching second languages came initially from studies of first language acquisition, in which the development of listening comprehension ability precedes and underlies the development of speaking ability. Likewise later, in school, fluent reading of age appropriate texts precedes and facilitates the development of composition skills. More recently, support for a comprehension-based approach to second language teaching has come from empirical research (Postovsky 1974; see reviews in Krashen 1981, 1985). An initial second language "incubation" or "internalization" period, concentrating on the comprehension of meaningful language input, is thought to help learners to "formulate a map of meaning and form in their minds and to internalize the associations between form and meaning" (Swaffar 1986: 9). If learners are allowed to focus on the language as a whole as a vehicle for meaning, it is thought that they will gradually assimilate syntactic and vocabulary knowledge in the target language. This receptive knowledge will form the basis for the production of utterances in the language. Some researchers go so far as to claim that production skills will "emerge" without explicit practice, as students receive and internalize large quantities of comprehensible input (Krashen 1985; Swaffar and Stephens 1981). Requiring learners to produce in early stages is seen as not only frustrating and anxiety-causing for them, but also as counterproductive to an efficient learning process (Postovsky 1974; Terrell 1982). It is thought that forcing production in the absence of adequate language knowledge causes students to fall back on first language knowledge, leading to the L1 and L2 "transfer" phenomena observed in their speech and writing (Newmark 1966), and possibly even to the fossilization of inaccurate forms (Krashen 1985). Following this rationale, instruction in the comprehension-based approach begins with a period during which the learner is required only to comprehend written and oral texts, and not to produce them – although production is encouraged. The incubation period in the comprehension-based approach is claimed to result in more accurate production, as learners are given sufficient exposure to native speaker models and enough time to internalize accurate oral and written representations of the forms and structures of the target language. Empirical evidence has demonstrated that extensive listening before production results in more accurate pronunciation (Neufeld and Schneiderman 1980; Postovsky 1981). Less is known about the effect of early emphasis on comprehension in the development of grammatical, vocabulary and discourse level knowledge. Krashen (1985) suggests that second language grammar is acquired through understanding of meaning and that initial emphasis on formal aspects of language is counterproductive; form is acquired through focus on meaning. There is considerable empirical evidence from Canadian French immersion programs and other contexts where the comprehension of meaningful input is emphasized almost exclusively in the initial stages that such development takes place (Edwards *et al.* 1984; Genesee 1987; Harley 1986, forthcoming; Lightbown 1989; Swain and Lapkin 1982).

Recent research, including that with French immersion students, suggests, however, that focus on form in a meaningful context may be important in developing grammatical accuracy in some aspects of speaking and writing – notably those that lack salience in communicative language use (Allen *et al.* 1987; Burger 1989; Harley 1989, 1990; Swain 1985, 1988; Van Patten 1990) and may even enhance comprehension (Courchêne and Pugh 1986; Champagne, research in progress). Proponents argue that learners need to know how formal structures organize and represent meaning, and that learners should therefore be made explicitly aware of the links between grammatical structure and meaning in oral and written input.

The ESL programs of the Second Language Institute (SLI) at the University of Ottawa offer the possibility of exploring the effect of meaning-focused comprehension-based instruction on second language development and, as well, to contrast this with the effect of explicit form-focused instruction at similar proficiency levels. The initial research has explored both issues.

Instructional Context and Procedures

At the University of Ottawa, a large bilingual (French – English) university in Canada's national capital, undergraduate students are required to reach a certain level of listening and reading proficiency in their second language before graduation. (Their chosen language of instruction is considered to be their first language.) In response to the institutional needs of students, the SLI has developed a comprehension-based program comprising 4 one-semester courses, drawing on the theoretical and empirical bases outlined above. The courses, given in both English and French for beginning and intermediate students, emphasize comprehension of meaningful oral and written texts throughout. The program consists of a progression of reading and listening skills to be mastered (e.g., identifying the main idea, scanning, inferencing) and a bank of authentic, thematically organized teaching materials for both reading and listening. The themes are carefully selected for their interest and appropriateness for university students, their current topicality, the availability of material and their potential for exploitation in the classroom. There is no systematic teaching of grammar in these courses, although grammatical questions and problems which arise are dealt with by teachers in context. Oral and written production in the second language is not required, but is encouraged as the student progresses so that by the end of the second or early in their third semester students may frequently speak or write in class. They are not evaluated on this, however. The parallel existence of four-skill courses with explicit grammar instruction for other clienteles at the same proficiency levels at the University offers the possibility of comparative study of language development in the two instructional contexts.

A pilot study was carried out with two intermediate level ESL courses using different teaching approaches. These one-semester classes included 54 contact hours (four hours per week).

Research Issues

Methodological Questions

The methodological issues dealt with in the pilot study were the following:

What kinds of measurement instruments and procedures can be used to track student gains in specific aspects of target langauge proficiency (e.g., vocabulary, syntax, discourse markers)?

Can a reliable self-report scale be developed which captures different levels of knowledge of vocabulary items?

Can introspection be used as a technique for exploring links between comprehension of meaning and acquisition of vocabulary, and if so, how?

Theoretical Questions

Working hypotheses were formulated for this research in the form of general and specific questions[3]:

1) In which aspects of English language proficiency are gains made in **Comprehension-based** classes (e.g., in global receptive proficiency, vocabulary, grammar)?
2) Which type of vocabulary items are most easily acquired, content words (nouns, verbs, adjectives) or discourse connectives?
3) Are content vocabulary items which are related to instructed themes more readily acquired than those taken from uninstructed themes?
4) Can different stages of acquisition of vocabulary items be identified?
5) Is there an identifiable progression in the development of sentence-level grammatical knowledge? That is, does the ability to recognize correct or incorrect sentences precede the ability to correct the incorrect sentences?
6) Is grammatical knowledge acquired in comprehension-based courses without explicit grammatical instruction?
7) How do the results form a **Comprehension-based** course differ from those of a **Four-skill** course at the same level?

Methodology

Subjects

Subjects were 37 young adult university students (19 in the **Comprehension-based** class in 18 in the **Four-skill** comparison class) from a mixture of first langauge backgrounds.[4] Both groups included a range of intermediate proficiency levels, as assessed by a placement test at the beginning of the session.

Classroom Treatment

The **Comprehension-based** class focused on the development of listening and reading skills using authentic texts on selected themes. There was no systematic grammatical instruction. Out of 4 hours of weekly class time, approximately 1 ½ hours were spent on instruction and practice of reading skills (e.g., scanning, skimming, guessing meaning in context, recognition of paragraph patterns) and the reading of authentic texts and answering comprehension questions on their content. Another 1 ½ hour period of class time was reserved for comprehension practice in the language laboratory, during which students would listen to an authentic audio or video recording on the same theme as the current reading text and would then answer a series of questions focusing on different aspects of comprehension (global, specific information, inferencing). One hour per week was spent on newspaper or magazine reading and further development of reading skills with these texts.

The **Four-skill** class was taught using an integrated four-skill approach with 1 ½ hours a week devoted to grammar instruction, including explicit exercises on prepositions and vocabulary. Theme-based listening and reading materials, including 2 themes which were also taught in the experimental class (i.e., Media and Environment) were used for up to ½ hour a week. A further ½ hour a week was devoted to writing activities and at least that much time to organized speaking activities.

Measures

The measurement instruments for this study were all based on written texts or sentences. The following measurement instruments or tasks were selected or developed for the study, and were administered at the beginning and end of the course unless otherwise specified.

Global Receptive Proficiency Tests

To establish base-line data, a Placement test of listening and reading skills was administered to both groups at the beginning of the course. Unfortunately, due to class-time constraints and program requirements, it was not possible to re-administer the Placement test to the two groups as a measure of gains in global receptive proficiency. A similar Exit test was, however, given to the **Comprehension-based** class at the end. The Placement and Exit tests include reading and listening sections with questions and activities based on authentic texts (e.g., dialogues, news stories, instructions, explanations, short reports, interviews or lectures). There are a variety of response formats including chart filling, short written answers, true or false and multiple choice. Questions test global comprehension of the text, as well as the ability to, for example, identify main and supporting ideas and to make inferences.

Vocabulary Measures

Three themes were selected as a basis for instrument development, according to the criteria discussed above. One of the themes, Media, was used for instructional units in both the **Comprehension-based** and the Four-skill classes. A second theme, Family Custody, was used for instruction and introspective data gathering in the **Comprehension-based** class, and a third theme, Fitness, was retained for comparison testing (i.e., to measure student progress with materials not related to instruction).

A number of theme-related content words (nouns, verbs, adjectives) and cohesive markers (e.g., "in fact", "because", "however"), were selected from each written text. These items were then screened for French cognates with the help of a bilingual native speaker of French, since it is known that cognates present special learning characteristics and are generally easy for students in our bilingual context (Duquette 1991). Based on the selected items, two sets of instruments were then developed to measure vocabulary acquisition, as follows:

Cloze Tests

Two rational deletion Cloze tests with approximately 35 blanks each were developed. These were created from theme-related written texts selected for the study (i.e., Media and Fitness), and tested the selected content words and cohesive markers. Students were asked to fill in the blanks from a master list which included all the missing words plus five distractors. The original (unmutilated) media text was presented in class as part of the theme unit on media, to develop comprehension skills and to provide general informational background.

Vocabulary Knowledge Scale

A self-report *Vocabulary Knowledge Scale* (VKS) was developed for the study (see Figure 1). This 5-level descriptive vocabulary knowledge scale represented an attempt to capture different levels of self-perceived knowledge of specific words. These levels range from total unfamiliarity through recognition of the written word and some idea of its meaning, to the ability to use the word in a sentence.

Figure 1 **Vocabulary Knowledge Scale Categories**

I. I have never seen this word.
II. I have seen this word before, but I don't know what it means.
III. I have seen this word before, and I think it means _____. (synonym or translation)
IV. I know this word. It means _____. (synonym or translation)
V. I can use this word in a sentence: _____.

Students were administered each of the three theme-related word-lists and the corresponding VKS on a separate occasion. (Listed words were presented in scrambled order to remove contextual information.) Students were then asked to indicate on the VKS their degree of knowledge of each target word. The VKS lists were administered prior to students' taking the corresponding cloze test.

VKS Scoring

The student self-report of vocabulary knowledge in categories III-IV on the VKS was used as evidence of **demonstrated** rather than **perceived** knowledge. The following scoring adjustments were thus made to the self-reported knowledge categories, resulting in a 6-level scale.

Category III: If the synonym or translation given was clearly wrong, the response was scored as category II; if correct, it was scored as category IV. Thus category III was important for **eliciting** perceptions and evidence of vocabulary knowledge for two different **scoring** categories. If the student indicated category V and produced a sentence from which it was impossible to tell if he or she knew the exact meaning or not, it was scored as category III. The following examples were taken from student responses: for the word "wildlife", a student wrote "She shall love wildlife."; for the word "masterpiece", another wrote "The fire destroyed the masterpiece of the city." Both were scored as category III.

Category V: It was necessary to split category V into two levels, to reflect both semantic knowledge and grammatical exactness of the use of the target word in a sentence context. if the word was mis-used according to both criteria, it was scored as category II. A category V score reflected knowledge of the referential meaning of the target word, but its use in a context requiring a different grammatical category (e.g., a target noun used as a verb form). Examples for the target word "chemicals" were: "Hydro Quebec produce some dangerous chemicals liquid with electricity," and "I work for a chemical products company." An example for "to retire" was "This famous player announce his retire." Other grammatical problems in formation of the sentence were ignored. Scoring category VI reflected both semantically and grammatically correct use of the target word in a sentence.

Grammar Tests

Two measures of grammatical knowledge were used in the study. The first, a test of grammatical knowledge developed by Bialystok and her colleagues (1981), consisted of five correct and twenty incorrect sentences (the latter with errors of tense, number, word order, etc.). Students were given scores for two levels of grammatical knowledge: 1) grammaticality judgements (recognition of correct and incorrect sentences) and 2) for their ability to correct the incorrect sentences.[5]

The second test measured knowledge of common *Prepositions* (i.e., at, on, to, with, in, of, for). In this test students were required to fill in missing prepositions in twenty sentences.[6] Scores were based on the number of correct prepositions provided.

Introspection Task

Further data was gathered on vocabulary acquisition in the **Comprehension-based** class. A retyped newspaper text on the theme of Family Custody in a divorce case was given in class as a pre-test for vocabulary knowledge. Students were asked to read the text rapidly and to underline all words whose meanings they didn't know. The students were then given another copy of the text, this time divided into segments of several sentences each. They were asked to read the text again and to answer six comprehension and four inferencing questions. While doing this, they were asked to write (in the spaces between segments) how they dealt with each unfamiliar word they had identified (e.g., ignore it, try to infer the meaning, look it up). A few days later, each student was given the list of words he or she had identified as unknown, together with the *Vocabulary Knowledge Scale*, and asked to indicate his or her level of knowledge of each word. The data collected included scores for the reading comprehension exercise, the questionnaires and the comments. The introspective data was gathered only in the **Comprehension-based** class, during the 8th week of a 13 week semester.

Analyses

The statistical analyses included calculation of:

- descriptive statistics on all variables;
- analyses of covariance for all pre-post variables to determine whether there were gains for either group or any between-group differences in patterns of gains. (In the first case, significant group gains are reported from T-tests as well.)

Frequency data were calculated on the VKS for all words, to determine the levels of vocabulary knowledge demonstrated by each individual for each item at the beginning and end of the course. They were also calculated for discourse connectives versus content words separately. Finally, to allow multivariate analysis of vocabulary gains, the pre-post status of each word on the VKS was scored dichotomously. To do this, *Vocabulary Knowledge Scale* categories I, II and III (levels of relative familiarity with words for which the correct meaning is not known) were grouped into a "not known" category, and categories IV, V and VI (levels of knowledge of word meaning and appropriate use), were grouped into a "known" category. Scores were calculated for each student on the total number of "known" words at the beginning and end of the course, as well as for content words and discourse connectives. Pre-post gain and Ancova analyses were done on these ("known"/"not known") scores as well.

Findings

Methodology

With respect to methodology, the measures we used in our initial study proved largely appropriate for the intermediate proficiency level of our subjects and for our research purposes. All measures are sensitive enough to reflect specific gains on different aspects of language knowledge and use, but certain refinements are required. These are discussed below with respect to each instrument.

1. Global Receptive Proficiency Tests

The Placement and Exit tests used in the study are specifically designed for the comprehension-based courses and thus are of an appropriate difficulty level for these students. The students in the comprehension-based class were also exposed to classroom tasks similar in format to those appearing on these tests. While the comparison class had some exposure to such activities, there may be some advantage on these tests for the comprehension-based students. In a future comparative study, a more method-neutral test should be used for both groups at the beginning and end of instruction, which presents a balance of tasks better reflecting the classroom activities of both groups.

The major problem with testing global proficiency was logistical - due to miscalculation of the time demands on participants in our study - and resulted in an unforeseen critical gap in the comparison data. Since it turned out to be impossible to administer the Exit test to this group during class time, the only possibility would have been to pay students to return after their final examination. This was not feasible in the exploratory study, but should be built into a future comparison.

2. Vocabulary Knowledge Scale

Students appeared to answer the VKS with certainty, and the patterns of change in vocabulary knowledge of the target words during the course indicate that it captures something of a progression in development of vocabulary knowledge. There appeared to be some variation in student interpretation of "I think" and "I know" (categories III and IV). Also, words were sometimes used in general ways in category V sentences which made it difficult to judge whether or not students knew a specific meaning of the word. To correct these problems we have clarified the instructions for the VKS by emphasizing the key instruction words, and now require that students writing a sentence for category V also provide a meaning in category IV. These changes should improve scale reliability. We plan to establish the reliability of the scale with a large, independent sample of ESL students. We also will seek to establish the relative distance between the VKS categories, using dual scaling.

The validity of the VKS also needs to be fully examined; however, this is difficult given the dearth of vocabulary instruments which aim to measure growth in knowledge of individual words (Curtis 1987). In any case, we intend to carry out a concurrent validity study with a general proficiency measure and if possible with a measure of vocabulary breadth with the independent sample.

It was unfortunate that we had to merge the VKS categories into two major categories ("known" and "unknown" words) for quantitative analysis, as gains between adjacent categories could not be demonstrated statistically with this sample size (suggested by the descriptive statistics, Table 2). This can best be remedied through a much larger sample.

3. Cloze Tests

We used texts appropriate for intermediate level students to construct the Cloze Tests, which consequently tended to be too long and too difficult for this level due to the reduced redundancy. The use of a word list probably made the task harder and more time consuming than an open cloze, although it facilitated reliable scoring. Since the time requirements of these tests made it almost impossible to administer all of them during class hours, students in the comparison group were assigned some of them at home, which resulted in cheating and invalid data.

In order to avoid this problem and to ensure that all students do all the assignments under similar conditions, we are now developing summary cloze tests with fewer words and accompanying word lists. (A multiple choice format, with distractors based on errors made by similar groups of students, might provide an alternative solution. It would be an easier task, but the disadvantage is that recognition rather than recall would be emphasized.)

4. Grammar Tests

The preposition test appeared to work well. We plan to establish its statistical reliability.

The grammar test included 5 correct and 20 incorrect sentences. Based on the pilot study we are developing a new instrument which will include the same number of correct and incorrect items. We will specify grammatical points to be tested, and prepare parallel correct and incorrect items for each. For example, an item such as "Water is extreme important for life." would be balanced with an item such as "The cubs are generally born in the early spring."

After establishing the reliability of the test, we would then be able to adequately test the implied hierarchy of grammatical knowledge, as follows:

Level 1: correct items judged as correct.
Level 2: incorrect items judged as incorrect.
Level 3: incorrect items corrected.

5. Introspection Task

The introspection task yielded interesting information about the influence of different comprehension tasks on student learning behaviour, i.e., what students pay attention to. We intend to work further on this procedure as well as to explore other introspection techniques as a means of seeking more detailed indications of mental processes involved in performing comprehension tasks. It appears to us that some training of students to analyze and discuss their learning processes would be helpful. The introspection exercise in the pilot study involved writing comments. We wish to supplement this with recorded oral protocols in the future. We would also allow them to do the exercises in their mother tongue.

The methodology in general is promising for written language input and outcomes, and parts of it could probably be adapted for work on listening and speaking.

Theoretical Outcomes

Tables 1 and 2 present descriptive statistics on each variable for all subjects having valid pre-test and post-test scores, results of T-tests showing the statistical significance of pre-post gains, Ancova analyses of differences in gains between the comprehension-based and four-skill classes, and bar graphs illustrating pre-post scores on the VKS. These are discussed below.

Gains were made in receptive English proficiency by the **Comprehension-based** classes and comparison group in global receptive proficiency, vocabulary and grammar following somewhat different patterns.

Global Receptive Proficiency

Gains in overall receptive proficiency are apparent for both groups from indirect evidence, even though it was not possible to use the same pre-post measure. This evidence includes teacher observations and class tests, and the large difference in pre- and post-course percentage scores on measures of similar difficulty for the **Comprehension-based** class (Placement and Exit tests).

Vocabulary

Both classes showed gains on at least some vocabulary measures, revealing somewhat different patterns on the cloze tests and VKS favouring the comprehension-based class. There were also differences in gains between content words and discourse connectives, the former in general being far easier, and, as one might expect, better learned when part of thematic class instruction. On the VKS word-lists for the instructed theme, a comparison of pre- and post-course results showed gains for both classes (total score and content word score). However, only the **Comprehension-based** class showed significant gains on discourse connectives. On the uninstructed theme, for which data were available only for the **Comprehension-based** class, VKS gains were significant for the total score and content words but not for discourse connectives. These results are illustrated graphically on Table 2 and reflect shifts from self-report categories I-III (word not known) to categories IV-VI (word known) on the subscores for this scale. While it was impossible to statistically verify progress of students on individual words from one scale category to another, the bar graphs indicate that such progress was made.

The **Comprehension-based** class made highly significant gains on the instructed cloze test (Media) on measures of total "known" words, content words and discourse connectives, while on the uninstructed cloze test (Fitness) gains were only significant for content words. The **Four-skill** class, on the other hand, made significant gains only on the content words on the instructed cloze test. (Unfortunately the data for this class on the uninstructed theme were not valid due to the procedural problems mentioned earlier.) While these results suggest different patterns of gains for the two groups and stronger gains by the **Comprehension-based** class, there were no significant inter-group differences related to the Cloze and VKS vocabulary measures (Table 1).

Grammar

On the grammar tests, neither class showed significant gains on the ability to recognize correct or incorrect sentences. The **Four-skill** class, however, had significantly higher scores at the end of the course on the ability to **correct** incorrect sentences, and significantly more than the **Comprehension-based** class.

Both groups made significant gains on the preposition test. Again the gains of the **Four-skill** class were significantly greater than those of the **Comprehension-based** class. Thus while there is some evidence that grammatical knowledge is acquired in comprehension-based courses without systematic grammatical instruction, such instruction appears to lead to greater gains on these measures.

Table 1 **Pre-Post Gains in Comprehension-Based and Four-Skill Classes**

MEASURE	COMPREHENSION-BASED CLASS (N = 17)									FOUR-SKILL CLASS (N = 18)				GROUP DIFFERENCES
	Maximum score	Instructed Theme				Maximum score	Uninstructed Theme				Instructed Theme				Instructed Theme Only
		pre-$\bar{M}$	SD	post-$\bar{M}$	SD		pre-$\bar{M}$	SD	post-$\bar{M}$	SD	pre-$\bar{M}$	SD	post-$\bar{M}$	SD	
Vocabulary															
Rational Cloze	37	8.0	4.6	20.3***	9.5	34	8.5	5.8	10.2	4.5	13.7	10.0	17.3	12.1	n.s.
Total Score	30	6.3	4.4	12.5***	7.2	30	10.7	6.6	13.6***	6.8	3.2	4.0	6.3*	7.4	n.s.
Content Words	7	3.0	2.0	3.7**	2.1	4	1.2	1.1	1.5	1.2	2.1	2.2	2.5	2.7	n.s.
Discourse Connectives															
Vocabulary Knowledge Scale	37	11.6	4.3	20.5***	4.1	34	13.7	6.0	17.5***	4.8	9.7	4.7	16.2*	8.0	n.s.
Total Score	30	7.8	3.4	15.4***	3.3	30	11.5	4.8	14.6***	3.9	5.3	3.4	11.0**	5.9	n.s.
Content Words	7	3.8	1.3	4.7**	.8	4	1.4	1.0	1.8	1.2	3.8	1.2	4.7	1.8	n.s.
Discourse Connectives															
Grammar															
Recognition	25	15.6	3.8	16.2	2.8						15.6	3.5	16.5	4.6	n.s.
Correction	20	5.7	4.4	6.6	4.3						6.6	3.7	9.3**	3.7	4S > CB *
Prepositions	20	9.4	3.5	11.1*	3.2						10.8	3.4	15.7***	2.7	4S > CB ***

* $p < .05$
** $p < .01$
*** $p < .001$

CB = Comprehension-Based Class
4S = Four-Skill Class

Fitness data

not available
for this class

Introspection Task

It was clear from student responses to the introspection task that their most common response to unknown words was to ignore them, unless understanding was specifically required to answer the comprehension questions after the reading task. Guessing the required meanings (sometimes with the help of the context in the comprehension question as well as in the text) was the major strategy used with needed words. Some students reported looking in a dictionary – a strategy used more by certain individuals than others. All in all these findings suggested that students followed the "law of minimum effort" and that the nature of the comprehension questions determined to a large extent the extra mental effort they would make to find meanings of unknown vocabulary items.

Discussion

Theoretical Issues

The VKS results indicated that the **Comprehension-based** class made significant gains in knowledge of content words and discourse connectives relating to the instructed themes, whereas the **Four-skill** class demonstrated gains only on content words, and not on discourse connectives. (Both groups also made significant gains on the "total words" measure, mainly reflecting gains on content word knowledge.) These differential outcomes may indicate that the greater focus in the **Comprehension-based** class on comprehension of the meaning of discourse chunks, which may reinforce (by making more salient) the meaning and functions of words related to text organization.

The VKS results further indicate that significant gains by the **Comprehension-based** class in knowledge of discourse connectives were only in relation to the instructed theme and not the uninstructed one; i.e., students were better able to provide the discourse connectives in the instructed text. This may simply be due to their better comprehension of the instructed text that facilitated their performing the task. Another possibility is that while discourse connectives are not theme specific, certain discourse connectives may be more characteristic of given text types (e.g., a scientific text may exhibit more cause and effect related discourse devices), and these text types may be associated more with certain themes. Replication of this finding and appropriate frequency counts for discourse connectives of interest in relation to all texts presented would be required for further interpretation.

The **Comprehension-based** class likewise made significant gains on the cloze test based on the instructed theme for total words, content words and discourse connectives, while on the uninstructed theme gains were only significant for content words. This may again suggest one way in which instruction makes a difference. Instructional focus on the content, organization and theme-related vocabulary of a given text, leading to better comprehension, appears to aid students in making a more successful choice of words for cloze blanks on the text at a later time when they no longer remember specific facts about the passage. The **Four-skill** class did not show significant gains on the discourse connectives, even though both classes spent approximately the same amount of time on the instructed theme. This probably reflected less focus and practice on text comprehension strategies. In spite of the different gain patterns for the two groups on vocabulary measures, inter-group differences were not significant. This may have been due to the extreme heterogeneity of both classes in proficiency level – which is reflected in all measures used in the study. Again, replication with more homogeneous groups is needed.

Evidence was found of gains in grammatical knowledge (prepositions for both groups and grammatical correction skills for the **Four-skill** class). **Comprehension-based** class gains on knowledge of prepositions and discourse connectives provide evidence that some (lexically based) grammatical knowledge can be acquired incidentally through an exclusive focus on comprehending meaningful language without grammatical instruction. The considerable gains of the **Comprehension-based** class in knowledge of prepositions may be due to the fact that prepositions are structure/function words. It may be that emphasis on and consequent gains in text comprehension in the **Comprehension-based** class result in better understanding of the meaning and function of these words. However, superior gains of the **Four-skill** class suggest that explicit practice in the recognition and use of prepositions leads to a higher level of mastery.

There was no evidence of gains in grammaticality judgement (the ability to judge correct versus incorrect sentences) for either group. It is possible that both groups had indeed improved in this respect (i.e., implicit grammatical knowledge) but 1) due to the relatively high pre-course scores and the small number of sentences, change was not demonstrated statistically. On the other hand, the **Four-skill** class gained significantly on the ability to correct incorrect sentences, and significantly more than the **Comprehension-based** class.

The fact that gains on several grammatical measures (prepositions and error correction) were significantly greater for the **Four-skill** class suggests that explicit grammar teaching enhances students' ability to provide grammatically correct forms on tasks which draw their attention to these forms. (We did not in this study look at the quality of spontaneous grammar use, but intend to do so at a later stage of the project.)

Preliminary results from the introspection study demonstrated clearly that students tend to do the minimum required. Thus in comprehension exercises they seek or infer meaning of new words in reading texts only if this is necessary to answer the questions at the end. Our pedagogical conclusion is that the nature of the tasks students are required to do strongly influences what they will attend to, and should therefore be a very important consideration for the classroom teachers.

There is also some evidence of gains in productive vocabulary skills by both classes (i.e., the number of students scoring in "known" categories IV, V and VI on the VKS). We will elicit and examine gains in productive skills more systematically in our future research.

Conclusion

Student gains on different measures based on the instructed (vs. the uninstructed) theme, as well as superior gains in grammatical knowledge for the comparison group clearly indicate that instruction makes a difference in the level of gains on different aspects of language knowledge. This conclusion is further supported by the instrospection data indicating that the nature of instructional tasks affect what learners attend to and consequently may eventually learn.

The results of the study suggest superior gains by the **Comprehension-based** class in text comprehension and discourse processing, despite their lower level of gains in error correction (grammatical knowledge). It may be reasonable to conclude, therefore, that explicit grammar instruction is not needed for the improvement of text comprehension skills. At the same time, when learners are focused on meaning, they may not attend to grammatical forms, particularly those not required for global understanding, and may not, therefore, substantially improve their grammatical knowledge. The superior

results of the **Four-skill** class on grammatical measures suggest that learners may need to receive some instruction focused on grammatical forms in order to develop sensitivity to them and as a basis for greater accuracy in speaking and writing.

It appears that a comprehension-based program can achieve its instructional objectives in developing learners' receptive proficiency. Gains in other aspects of language are incidental and may exhibit idiosyncratic patterns among individual learners (e.g., some students may analyze formal aspects of language even though these are not a focus of instruction). A comprehension-based ESL program appears to be a viable instructional alternative in academic contexts where priority is accorded to the development of receptive skills for high level text and lecture comprehension, and may also be a solid preparation for moving into more form-focused instruction and productive use of the target language.

We intend to follow-up this study with a series of within-class studies, limited to comprehension-based courses and focusing on vocabulary growth in this context. This research will incorporate the methodological improvements indicated above, including elicitation techniques for gathering information on students' ability to use the target language in freer written production tasks.

We intend to use both pre-post measurement and introspective techniques in the initial within-class study, then to replicate that study in a similar class, but alternating the instructed vs. uninstructed themes. In subsequent studies we would vary proficiency levels of subjects and, eventually, teaching methodology, thus building up a composite picture of classroom processes in the learning of vocabulary and other aspects of an L2.

Notes

1. We are very grateful to the following persons for their help with the project: Manko Rangongo, who taught the four-skill class; Lise Duquette, who helped in the screening of French cognates for the vocabulary measures; Marie-Josée Vignola, Justine Foxall and Karina Fleck, who were our research assistants at various stages, and Doreen Ready, our statistician.

2. An earlier report on this study was presented at the 9th World Congress of Applied Linguistics in Thessaloniki, Greece, in April 1990.

3. Most of these hypotheses are dealt with in this study. Several remain to be explored in subsequent research.

4. The linguistic composition of the 2 classes was as follows: **Comprehension-based** (N=18): 10 francophones, 5 Arabic speakers, and 1 speaker each of Chinese, Spanish and Comorean; **Four-skill** (N=19): 7 francophones, 4 Chinese speakers, 3 Polish speakers, 2 Arabic speakers, and one speaker of each of Japanese, Vietnamese and Mina.

5. These are examples of the type of sentences which appeared on the grammaticality knowledge test:

> Correct: "Jade is a stone of high value."
> Incorrect: "She speaks French very good."

6. These are examples of items on the preposition test:

> "She has applied _____ a new job."
> "Exposure _____ violence on TV is harmful to children."

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